# **Regulation on the Calibration of the Observation Instruments of Exclusive Observation Stations**

First promulgated date: July 18, 1992 Name revised and promulgated date: July 22, 2003

#### Article 1

This Regulations is enacted in accordance with the terms in Paragraph 6 of Article 20, Meteorological Act.

#### Article 2

The Central Weather Bureau (hereinafter referred to as CWB) of the Ministry of Transportation and Communications (hereinafter referred to as MOTC), the laboratory accredited by the Chinese National Laboratory Accreditation, or the laboratory accredited by a cross-recognized foreign country (hereinafter either of the three laboratories aforementioned is referred to as the Calibration Unit), may accept the application of an exclusive observation station to calibrate its equipped observation instruments according to Paragraph 1 of Article 20, Meteorological Act.

#### Article 3

The standard for calibration of observation instruments shall trace to the standard of the National Laboratory of Weights and Measures Standard, Bureau of Standards, Metrology, and Inspection, Ministry of Economic Affairs, or the national standard of a cross-recognized foreign country; the calibration cycle of observation instruments shall follow the rules of the individual Calibration Unit.

The preceding rules of calibration shall be enacted separately.

#### Article 4

An exclusive observation station shall follow a self-decided calibration cycle of each equipped observation instrument and apply for an instrument calibration from a Calibration Unit to prove it be qualified for use, and then can be used.

The error of an observation instrument is within the tolerant error as listed in the attached "Criteria for accreditation of the observation instruments" shall be considered as qualified. (see attached tables) The difference between the displayed value of the observation instrument under calibration and the standard value of the standard device is named the error of that observation instrument; the tolerant errors settled for each type of observation instruments are named the maximum permissible errors.

#### Article 5

Should the observation instrument(s) of an exclusive observation station shows an error caused by natural disaster or other causes, an application for calibration from a Calibration Unit is needed.

#### Article 6

Should the CWB find that the observation record of a certain observation instrument of an exclusive observation station had successive or obvious errors, CWB may inform that station to stop using that instrument and order to send it for calibration.

#### Article 7

An exclusive observation station shall fill in an application form and turn in a calibration fee when applying for a calibration of its equipped observation instrument.

When apply for a calibration from the CWB, the calibration fee shall be charged in accordance with the provisions enacted by the MOTC according to Paragraph 2 of Article 30, Meteorological Act.

When apply for a calibration from a Calibration Unit other than the CWB, the calibration fee shall be charged in accordance with the provisions enacted by that unit.

#### Article 8

The calibration of observation instrument(s) shall be conducted at a Calibration Unit; whereas the Calibration Unit may send its faculties to its place to conduct an in-situ calibration upon the request and application of the exclusive observation station under at least one of the following conditions:

- 1. Too big to move;
- 2. Adhered to the ground, a building, or other mechanic equipment and hard to tear apart;
- 3. It's liable to be damaged or lose its accuracy while moving or other considerations.

For applying to the CWB for a calibration, the applicant shall not only turn in the application fee (stipulated fees) in accordance with Paragraph 2 of Article 30, but also pay for the errand costs (including transportation fees), overhead fees, and/or other necessary expenditures.

#### Article 9

The observation instrument sent for calibration shall bear marks of the brand of production or factory logo, serial number of production, engraved scale, and the vernier (if any); the attached technical document or brochures shall also be submitted for calibration's reference.

Auto-recording types of instrument for calibration shall be submitted with its recording or displaying device(s); power supply exclusively used for the instrument shall be sent together.

#### Article 10

Should the observation instrument sent for calibration is totally damaged, seriously contaminated, or not useable, the Calibration Unit might reject the application.

#### Article 11

The Calibration Unit may tear apart or ask the applicant to tear apart the instrument for partial calibration, if necessary.

#### Article 12

If the instrument sent for calibration with two (2) or more scales and any one of them fails to meet the criteria, the whole instrument shall be considered as a failed one.

#### Article 13

The Calibration Unit shall issue a certificate to those instruments that passed the calibration, or a notice to those stations with instruments failed to pass the calibration.

#### Article 14

The format of the application form, certificate, and notice aforementioned in this Regulations shall be determined by the Calibration Unit.

#### Article 15

This Regulation shall become effective on the date of promulgation.

#### Criteria for accreditation of the observation instruments

A. Atmospheric Pressure Measuring Instrument

Unit: hectopascal (Symbol: hPa)

	0	
Types of Instrument	Measuring Range	
		Maximum Permissible
		Error
Precision Mercurial	866~1050hPa	±0.33hPa

Barometer	(650~787mmHg)	(±0.25mmHg)
Fortin-type Mercurial	866~1050hPa	±0.67hPa
Barometer	(650~787mmHg)	(±0.5mmHg)
Aneroid Barometer	866~1050hPa	±0.67hPa
	(650~787mmHg)	(±0.5mmHg)
Aneroid Barograph	866~1050hPa	±1.33hPa
	(650~787mmHg)	(±1.0mmHg)
Electronic Barometer	866~1050hPa	±0.67hPa
	(650~787mmHg)	(±0.5mmHg)

## B. Temperature Measuring Instrument

	Unit: degree Celsius (Symbol: °C)		
Truess of	Minimal	Measuring	
Types of	Scale/Name	Range(°C)	
Instrument			Maximum Permissible
			Error (°C)
	Interval	$-50 \sim -20$	
	$\leq 1/5^{\circ}C$		$\pm 0.5$
		$> -20 \sim 100$	
			± 0.3
	Interval	$-20 \sim +40$	$\pm 0.3$
Glass-tube	≥1/2°C	>40~100	± 0.5
Thermometer	Thermometer	$\leq$ $-20$	± 0.5
	in Iron Tube	> -20	± 0.3
	Maximum	< 0	± 0.5
	Thermometer	$0 \sim 50$	± 0.3
	Minimum	<-40	± 1.0
	Thermometer	$-40 \sim -20$	± 0.5
		> -20	± 0.3
Metallic	Metallic Thermograph	$-20 \sim +40$	± 0.5
Thermometer	Thermometer		± 0.5
Electronic	Thermograph Thermometer	$-20 \sim \pm 40$	± 0.5
Thermometer		20 - + +0	$\pm 0.5$

## C. Humidity Measuring Instrument

	Unit: perce	entage (Symbol: % RH)
Types of Instrument	Measuring Range	Maximum Permissible
	(% RH)	Error (% RH)
	0~100	± 5
Hygrometer and/or		
Hygrograph		

## D. Precipitation Measuring Instrument

	Unit: milli-meter (Symbol: mm)
Types of Instrument	
	Maximum Permissible Error (%)
Rain Gage	
	± 0.3
Tipping-bucket Rain Gage	
	Precipitation $\pm 3$

## E. Wind-direction Measuring Instrument

		Unit: degree
Types of Instrument	Measuring Range	Maximum Permissible
	(degree)	Error (degree)
Anemometer or Anemometrograph	0~360	± 5

### F. Wind-speed Measuring Instrument

Unit: meter per second (Symbol: m/s)

Types of Instrument	Maximum Permissible
	Error (%)
	± 5
Propeller-type	
Anemometer/Anemometrograph	
	± 5
Three/four cup-type	
Anemometer/Anemometrograph	

## G. Sunshine-duration Measuring Instrument

Unit: hours (Symbol: h) a. Minimum threshold: 120W/m2 b. Maximum Permissible Error: ± 0.1h

H. Solar-radiation Measuring Instrument Unit: watts per square meter (Symbol: W/m2) Maximum Permissible Error: ± 5%